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ABSTRACT

A compendium of reports of experimental instructional projects and educational programs generated by teachers at 10 midwestern universities is presented. Most of the items report changes in a particular discipline area, but these arrangements can frequently be adapted for use in other departments and interdisciplinary programs. Subject matter areas include: transactional learning system for an introduction to advertising; chemistry, clay, and pottery; biology; videotapes and microcomputers in introductory chemistry; advanced composition for prospective high school teachers; master's level therapeutic recreation curriculum; instructional gaming in history; calculator calculus; English for foreign mathematics teaching assistants; self-instructional laboratory stations in neuroanatomy; a competency-based curriculum for graduate study in music; and instructional resources and graduate assistance training for developmental psychology. Institutional support areas include: dental faculty development; implementation of TIPS in the teaching of undergraduate science courses; faculty development; women in the humanities interdisciplinary program; an undergraduate program in mathematical methods in the social sciences; and course and program evaluation by students. A cumulative index to the 14 reports is included. (SW)

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Development and Experiment In College Teaching

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A compendium of reports
on educational experiment and development
in the disciplines and professional schools
at 10 Midwestern universities
Prepared and distributed by the
CIC Panel on Research and Development
of Instructional Resources

REPORT No. 14 SPRING 1979

The Committee on Institutional Cooperation (CIC) was established in 1959 by the Big Ten Universities and the University of Chicago to facilitate pooling of resources and talents on matters of mutual concern in higher education.

Foreword

These annual reports are collections of experimental instructional projects and educational programs generated by teachers at the Big Ten universities. Our purpose is to exchange information among college teachers, administrators, and educational researchers about ways to improve the conditions for learning. Most of the items report changes in a particular discipline area, but these arrangements can frequently be adapted for use in other departments and interdisciplinary programs.

The entries in Section I, Subject-Matter Area, describe department-based projects. Section II, Institutional Support, includes descriptions of institutional facilities, instructional media arrangements, and broad programs which span different disciplines. Section III is the Cumulative Index to all 14 reports. This index has been updated by deleting references to projects that are no longer active (the Archival Index lists these inactive projects).

Examination copies of earlier reports are on file in the office of each institutional representative (see p. iv), and at the CIC central office. Requests to purchase back issues should be sent to the address below. This publication is not copyrighted and teachers and administrators are encouraged to make free use of the material.

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Professor Ericksen is chairman of the CIC Panel on Research and Development of Instructional Resources and, with John A. Cook, is editor of the present report.

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I. Subject-Matter Area

ADVERTISING

Transactional Learning System for an Introduction to Advertising

Introduction to Advertising (ADV 205) is a comprehensive survey of basic principles and practices of advertising in relation to the American economy, society, and system of mass communication. It is a sophomore level course, and only about ten percent of the students enrolled are advertising majors. ADV 205 provides a sample of information important to students who have not yet made a career choice. Advertising majors do not choose this field of study until their junior year, and so approximately half of the students who intend to major in advertising receive career information of special importance.

There was a serious lack of uniformity across different ADV 205 class sections in objectives, materials, and methods. To alleviate these problems, the Advertising Department revised the course to include a Transactional Learning System involving individualized and/or group-based modules from which both students and instructors could learn. The complete system is composed of a set of classroom modules to be used in achieving student learning objectives and a set of complementary teacher-training modules. The modules include test materials to evaluate learning.

Learning and Evaluation Service consultants helped to develop direction and materials for teacher-training modules. One such module was completed. Five modules for use by students were completed, tested, and revised. A series of seminars was held to introduce the materials and available modules to all instructors; these were well attended and enthusiastically received. Suggestions for modifications in materials and modules have been incorporated, and response has been consistently positive. Formal classroom evaluation of the modules showed that parts of the modules were not effective and resulted in substantial revisions.

Dr. Charles Mauldin presented a paper, "The 205 Project: Improving the Basic Advertising Course and Teaching Instructors to Win in the Classroom," at the annual conference of the American Academy of Advertising.

For additional information contact Dr. Charles R. Mauldin or Dr. David H. Furse, Advertising Department, 201 Journalism Building, Michigan State University, East Lansing, Michigan 48824.

Chemistry, Clay, and Pottery

Because most pottery students have little or no background in chemistry, it is difficult for them to understand and make use of those sections of pottery courses that deal with composition of clays, formulation of glazes, type of pigments, and the firing process. A more serious problem is the possible damage to health when students are unaware of certain chemical hazards.

To resolve these problems project directors planned an individual study program in chemistry and ceramics to introduce basic chemical concepts and applications to ceramic materials and procedures. The course covers the following subjects: the elements and their properties, atoms and how they differ, chemical bonding, compounds and their formulas, nomenclature, crystalinity, the concept of chemical reactions, oxidation and reduction, pigments and colors, toxicity and safety precautions, weight relations, and simple calculations. A set of slides, audio tapes, and text materials was installed in a study carrel in the Art Department, and another was placed in the Instructional Media Center.

Introduced in fall 1977, the course was repeated in spring 1978. It is now optional for beginning students but required for those in advanced pottery classes. The effectiveness of the course is being measured at the end of each semester through student evaluations and evaluations of the examinations given to students on completion of the study program. The performance of students in the pottery courses who have had the chemistry class is also being compared to the performance of those who have not.

The instructional text, tapes, and slides can be reproduced inexpensively and provided to other universities at a small cost. For further information, contact Allan A. Denio, Chemistry Department, or Richard W. Joslin, Art Department, University of Wisconsin--Eau Claire, Eau Claire, Wisconsin 54701.

BIOLOGY

Another Drummer for Biology

There was a time when university students were attracted to the study of biology because it was so obviously related to their everyday experiences with animals and plants. However, that enticement is less evident today. Biology has polarized in two directions: one ecological, the other molecular. Both approaches are built on prerequisites of chemistry, physics, and mathematics. Students find it difficult to enter the field because they get lost in abstractions, formulae, and equations.

"Great Experiments in Biology" is an alternative pathway into the study of the biological sciences. It is oriented toward the study of people, problems, and methods. The course grew out of the proposals for the reform of science teaching that were advocated by the late James B. Conant as presented in his book, On Understanding Science.

Students study the problems that notable biologists faced, and they learn the methods that were developed to solve those problems. Although the students learn a great deal of subject matter, the emphasis of the course is on the dynamic process of science. Students learn to appreciate intellectual struggles in humanistic terms. They see the similarities and differences in the creativity of artists, writers, and biologists. They develop an empathy for scientists and gain an understanding of science vicariously. With this background, students are more likely to understand contemporary science and realize why chemistry, physics, and mathematics are so important.

The course is presented for home study through forty audio cassette tape recordings, assigned readings, and a study guide. The instructor is always available, but there are no regular class meetings. A series of videotapes is being produced to enrich the visual impact of the course. To round out the recorded experiences of the course, a home laboratory course has been developed. Students replicate some classic experiments and analyze the data of such notables as Mendel and Darwin, and they bring their data into the university computing center for statistical analysis.

For further information, contact Professor Emanuel C. Hertzler, Associate Dean of Academic Affairs, Office of Individualized Learning, The University of Michigan--Dearborn, 4901 Evergreen Road, Dearborn, Michigan 48128.

CHEMISTRY

Videotapes and Microcomputers in Introductory Chemistry

Each year at the University of Michigan approximately 4000 students take elementary chemistry. Much of their time is spent in chemistry labs, but now, because of a project supported initially by the Center for Research on Learning and Teaching and expanded with funds from the Exxon Education Foundation, many of these students can accomplish the lab work in half the time.

With the support from CRLT and assistance from the TV Center, a series of videotapes was created on such topics as "lab safety," "isomerism," and "atomic structure and vibrations." The tapes were made to demonstrate things that are difficult to show in large lectures. Many effects require special equipment that cannot easily be brought to the lecture hall and, regardless of class size, it is often hard to produce an intuitive, pictorial feeling for a subject often complicated with procedures and mathematical calculations.

Brief and vivid, the tapes were very popular with students. They also saved student and instructor time, as well as laboratory expense. In light of this success, a grant was applied for and received from the Exxon Education Foundation for expansion of the initial project.

More videotapes have been produced; now simply by putting a cassette into place students can view a television lesson in chemistry in full color. Students can also interact with microcomputers to simulate experiments which augment those they conduct in the laboratory. They can perform more experiments with results that are immediate and comprehensible.

Innovation in the elementary chemistry program has not been limited to the development of technical aids. The laboratory manual was redesigned using a variety of sound instructional techniques. The use of instructional objectives, overviews, reviews, examples, practice problems, feedback, and summaries increased learning and student enjoyment while it decreased the amount of time needed to complete experiments.

For additional information, contact Robert Kozma, Center for Research on Learning and Teaching, University of Michigan, 109 East Madison Street, Ann Arbor, Michigan 48109.

ENGLISH

Advanced Composition for Prospective High School Teachers

The University of Wisconsin--Oshkosh found that existing advanced composition courses did not serve the special needs of English majors and minors in secondary education. A new course was developed to meet these needs. The skills and understanding that the new course develops are enhanced through activities applicable to the problems of the high school composition teacher. Students gain practical experience through tutorial work under the supervision of the course instructor. Along with this, a writing laboratory serves students who seek assistance on their own or when referred by their instructors. The instructor of the composition course for prospective teachers supervises the laboratory, and student tutors from the course staff it.

The all-university writing clinic served approximately two hundred students during the fall of 1977. It has given English majors and minors an opportunity to work with students on the sort of problems they can expect to encounter while teaching high school English. It has familiarized these teachers-to-be with the components of effective writing and has given them practice in applying these components to student writing, a practical experience they may have otherwise not known. While experience with the project is too limited to forecast long-term results, the project has already enjoyed a measure of success.

The project has generated a practice set of thirteen exercises in criticism graduated in difficulty and degree of subjectivity. The practice set would be valuable in any practical program designed to develop abilities to evaluate student writing.

For further information, contact Douglas Kilday, English Department, The University of Wisconsin--Oshkosh, Oshkosh, Wisconsin 54901.

HEALTH

Master's Level Therapeutic Recreation Curriculum

A Master of Science degree in the practice of Therapeutic Recreation was designed in the Department of Recreation and Park Administration of Indiana University's School of Health, Physical Education, and Recreation. This one-year program combines classroom study and a field internship in a competency-based instructional design. Four courses have been selected to integrate each student's prior experiences as a practicing therapist with specialized administrative and therapeutic team-leadership competencies.

A consultant from the instructional development group of the University's Audio Visual Center guided a team of subject matter specialists through a systematic curriculum design process. Several technical procedures were adapted or created to meet the needs of this project. Curricular goals--general statements that were to serve as guidelines for subsequent design activities--were identified, refined, and assessed by practitioners, educators, administrators, and advanced students. Multidimensional scaling facilitated the analysis of goals. An exploration of the environment in which instruction was to occur focused on the identification of critical forces that influenced the emerging design, the determination of acceptable entry behaviors, and a review of the curriculum's resouree base. Professional competencies, patterned by the validated goal set, were identified and sequenced. A form of task analysis was modified to provide the design team with a visual map of the competencies, optimal course divisions, and integrative "threads" that would serve to link the program's components.

A final evaluation of the curricular plan revealed that most of the design team's decisions met the expectations of a sample of therapeutic recreation educators, administrators, and therapists active in the field. Some revisions were incorporated in the curricular plan based on the feedback by experts.

Further information on the design process used during this project is available from the Division of Development and Special Projects, Audio Visual Center, Indiana University, Bloomington, Indiana, 47401. Inquiry concerning the content of the curriculum should be directed to Dr. David R. Austin, Department of Health, Physical Education, and Recreation at Indiana University.

HISTORY

Instructional Gaming in History

A history survey course, "Europe Since 1500," is using instructional simulation gaming to help students understand selected periods in European history. Many historians fully recognize the nature and range of appropriate applications of instructional simulation gaming. A simulation--an abstraction of some real-life event--is appropriate when students cannot gain a vicarious experience by attending a lecture. An instructional simulation in the form of a game implies some type of competition, a distinct method of determining winners, and specific rules which govern the play of the game. Instruction presented via gaming is accompanied by post-game discussion.

The two games currently in use and the two in the development phase are entitled Spiegeldorf. During each game Spiegeldorf, an entirely mythical village, has all the characteristics of a small German village in Saxony. Each of the four games traces the development of village life in a specific period: the Protestant Reformation, the intellectual ferment which preceded the Enlightenment, the rise of the industrial state, and the ascendancy of the Nazi party.

A slide program introduces the students to each game. As the game unfolds, students assume the role of one of the villagers. In Spiegeldorf: A Simulation of Village Life in the Protestant Reformation in Germany, students assume the role of a peasant, tanner, steward, or nobleman. Each student receives five problem statements which involve some type of conflict resolution in the form of alternative decisions. At the end of the game, a graduate student assistant leads a small group in the post-game discussion.

In the second game in use, each student assumes the role of an organizer for the Nazi party in Spiegeldorf. As that organizer, the student attempts to convert as many villagers as possible to the Nazi party. A variety of well-documented persuasion techniques are available for the student to use in the simulation game.

While it is almost impossible to assess the impact of these games in regard to improved student learning, student reaction has been overwhelmingly favorable.

For additional information, contact James Riley or David Pace, History Department, Ballantine Hall, Indiana University, Bloomington, Indiana 47401.

MATHEMATICS

Calculator Calculus

Numerical computations facilitate the learning of calculus in a calculator-calculus sequence developed at Ohio State University with funds from the National Science Foundation. Each student in the course has a programmable calculator, the TI-58. Numerical approximation techniques are employed in the initial learning of concepts and theorems of calculus.

The usual deductive approach to the subject--definition, theorem, proof, application--is supplemented by inductive learning. A new topic is usually approached first through an application. Numerical approximations to a solution are computed by methods close to the calculus definition. By assignment of selected numerical exercises, students are encouraged to conjecture calculus formulas and important theorems; students gain an intuitive understanding of a result before it is formalized as a theorem and proved. Results not usually proved in introductory calculus sequences are explored numerically. Vocabulary is introduced informally and is formalized as needed for proofs.

Calculators are loaned to students by the project in exchange for a fully refundable $52 deposit. A student who completes one or more courses in the sequence has an option to purchase his calculator at a reduced price subsidized by the project. The project maintains a Computations Lab containing PC100A printers.

A formal evaluation, directed by a faculty member in Mathematics and Science Education, is presently underway. Preliminary evaluations of the 1977-78 sequence are positive. Faculty members both in and out of calculator calculus judge the examination performance of calculator-calculus students to be above average. Student course evaluations have been well above average. Attrition from calculus was lower among calculator-calculus freshmen than among the control group of freshmen in regular calculus. Finally, most students exercised their option to purchase their calculators, suggesting that the sequence can be viable without a subsidy.

Advantages claimed for approaching calculus from a computational base include the following: (1) Intuition is better developed, (2) applicability is better perceived, and (3) numerical methods are learned along with methods of calculating error estimates. The major disadvantage of the program is the time required for computing. This is minimized by the relative simplicity of key-stroke programming, by teaching programming along with the subject, and by putting a computer in the pocket of each student.

Persons wanting additional information on this project may contact Professor John Riedl, College of Mathematical & Physical Sciences, 164 W. 17th Ave., The Ohio State University, Columbus, Ohio 43210.

English for Foreign Mathematics Teaching Assistants

The regular courses in English as a Second Language taught at Ohio State are primarily composition courses, designed to enable advanced students (500 TOEFL minimum) to develop writing skills so that they may perform the normal note-taking, research, examination, paper, and thesis assignments with minimal handicap. Spoken English is not the focus of the courses, though there is inevitably some carry-over from classroom drills and discussions.

Adequate performance by foreign teaching associates, however, requires a high degree of oral skill. Not only must the foreign teaching associate be able to present academic material clearly, but also--and this is where the most difficult problems arise--he must be able to respond to highly idiomatic, elliptical comments and questions of native students who are often unable to phrase their questions in forms standard to the subject matter. This is particularly true in introductory courses, precisely those which foreign teaching associates are most likely to be assigned to teach.

A course offered in summer term, team-taught by an instructor in English as a Second Language and an instructor assigned by the Department of Mathematics, attempts to meet these special needs in order to improve the performance of foreign mathematics teaching associates in their classes in the regular school year. The course includes orientation to the attitudes and behavior appropriate to teachers and students in the American classroom. Videotapes of classes are viewed and discussed, giving special attention to linguistic problems which arise during instruction. The students practice teaching various concepts and do videotaped peer-teaching and criticism. Preparation is then begun for the teaching of a five-week, non-credit minicourse in basic algebra, which begins in the fourth week of the term. The mini-course is advertised as a free review of mathematics taught by new foreign teaching associates. During this course, the teaching associates' classroom performances are videotaped, and each week a two-hour seminar deals with the weaknesses revealed in the tapes. When this course is completed, an English course deals with the language and conventions of mathematics instruction in the United States.

The response from both the foreign graduate students and the American undergraduates whom they teach has been very gratifying, and the Department of English, with the support of the Department of Mathematics, plans to offer this program each summer.

For additional information contact: Betty Sutton, Department of English, 164 W. 17th Ave., The Ohio State University, Columbus, Ohio 43210.

Mathematics Placement Testing of High School Juniors

The Department of Mathematics at Ohio State University recognizes that a contributing factor in the mathematics remediation problem at the University has been the large number of college-bound high school students who take no mathematics after their sophomore year. Thus the department welcomed the invitation of a Columbus-area high school to administer the Ohio State University mathematics placement test to academic-track juniors and to assist in the advising of students before their senior year. This school was well suited for the effort since it represents a broad mix of students and has ACT scores close to the national average.

The mathematics placement test was administered in February to 353 junior students. The University scored the tests, then gave the high school counselors the scores along with material describing for each student the sequence of University mathematics courses required for his or her anticipated major. The counselors and mathematics teachers used this information to advise students in the choice of mathematics courses for the senior year.

Of the students tested, 51 percent were not enrolled in a mathematics course in their junior year, and 99 percent of these students placed at remedial mathematics levels. Of the students taking Algebra II as juniors, only 17 percent placed at remedial levels. The efforts of high school counselors and teachers resulted in almost all of the students who anticipated entering four-year colleges being enrolled in a mathematics course in the senior year.

Those students who wrote the early placement test and who plan to enroll at Ohio State in the summer or autumn of 1979 will write the placement test again during the orientation period. The results will be compared to the scores of the previous year, and this information will be made available to the high school. The hope, of course, is that with the proper high school courses, students can move into University programs above the remedial level, thus saving the students time and money and freeing the University of the need to provide extensive remediation.

The number of inquiries from school districts who would like to arrange for a similar opportunity has been large. Ohio State expects to expand the project next year to six schools and to make it available more widely the following year.

Persons wanting additional information on this project may contact Professor Joan Leitzel, Department of Mathematics, The Ohio State University, Columbus, Ohio 43210.

MEDICINE

Self-instructional Laboratory Stations in Neuroanatomy

Neural Behavioral Sciences at the University of Michigan is an integrated course in which neuroanatomy and several other basic science disciplines are taught to first- and second-year medical students. In order to provide neuroanatomy laboratory experiences especially during the first few months of medical school, laboratory stations were conceived which are self-contained and self-instructional and in which actual specimen material is utilized.

Instructional objectives, purpose, and any necessary prerequisite information are stated explicitly for several topics, and the station for each topic uses one of several self-teaching techniques. Important in station design is the use of brain specimens as a necessary part of the teaching-learning sequence. For example, in teaching the distinction between the roof, ventricles, tegmentum, and base of the various levels of brainstem, models are used; a brain in mid-sagittal section is labeled with numbered pins to identify, verify, or provide information about the important features; and students are required to put cards with specific information in an ordered matrix. This integration of specimen material into the self-instructional programs is the key feature of these stations.

Questionnaires were used to evaluate student response to the lab station concept and the level and adequacy of the specific stations. More than 98 percent of the 184 students who responded found the stations interesting, well organized, and clearly presented. In addition, 90 percent of the respondents felt that the station materials were presented at an appropriate level of difficulty. Short tests were administered with three of the stations to evaluate the degree of mastery of individual station content and of related, clinically relevant material. The mean of the test scores was 90 percent for the mastery test and 85 percent for the tests dealing with application of the new material.

A library of stations is currently being developed. Benefits derived from the stations include: (1) a flexible, off-the-shelf series of laboratory experiences, (2) specimen preparation which can be accomplished by a graduate student well before the time the lab is to be run, (3) laboratory set-up which can be done by non-professional personnel, (4) an economical but effective use of student time, and (5) an alternative to the lecture format. Better student understanding of course content is expected because of heightened awareness of true anatomical scale and of anatomical relationships of the material.

For further information contact Dr. Leslie J. Fisher, Department of Anatomy, University of Michigan School of Medicine, Ann Arbor, Michigan 48109.

MUSIC

A Competency-Based Curriculum for Graduate Study in Music

The School of Music at Northwestern University, with the assistance of a grant from the Fund for the Improvement of Postsecondary Education (FIPSE), is developing a competency-based curriculum for the twelve Master of Music programs offered by the School. During the past few years, several departments have explored the use of competency-based instruction by developing modules, self-study packets, tutorials, and internship opportunities as part of the curriculum in each area. The FIPSE grant provides resources to expand this approach to all areas offering Master of Music degrees. Each faculty member will determine the extent to which goals for courses can be stated in behavioral terms, translated into competencies, and measured objectively.

The FIPSE activities are divided into three stages: (1) A faculty development program is being initiated to define instructional techniques and to give faculty members an opportunity to become familiar with instructional media and evaluation techniques essential to a competency-based approach to music education. Learning through all sensory modalities is emphasized. Workshops are planned in cooperation with the Center for the Teaching Professions which will assist faculty in relating the essential features of a competency-based system to each faculty member's field. (2) Faculty will be encouraged and rewarded for their efforts in attempting alternative teaching/learning strategies in the classroom and for becoming familiar with different types of instructional options which can be built into the strategies designed to promote competency. Support grants and student assistance are available to faculty members who move from knowing to doing. A learning center is being developed to support competency-based programs and to help faculty develop modules, self-paced instructional programs, and other media-based learning systems. (3) Field-centered apprenticeships and clinical experiences in selected community centers are available to help students develop competencies in real-life environments. Professionals in the field will work closely with faculty in establishing field experiences for students.

The first year of the program is devoted to the development of competency-based materials and to the study of instructional options and assessment strategies, and to the identification of the field centers. The second year involves full implementation and evaluation of the competency-based strategies being used.

For additional information, contact Dr. Jack M. Pernecky, Project Director, Music Administration 108, Northwestern University, Evanston, Illinois 60201.

PHOTOGRAPHY

The Exposure/Development Workbook

Sensitometry, the photographic study dealing with the control of film by exposure/development, presents various obstacles to both students and teachers. In general, students studying photography do not have an extensive scientific background. Because available texts lack clear written and visual examples, and are often confusing or frustrating, or oversimplify, we are producing a workbook that will aid in the teaching of the Zone System on a more universal level.

The Zone System is based on one of the oldest rules in photography: "expose for the shadows and develop for the highlights." Our workbook offers a series of logical, progressive lab experiments designed to give the student a practical knowledge of the control that is possible by the exposure and development of film.

Each section of the workbook covers a different learning experiment arranged in sequential order. The theory behind each experiment is presented, and the necessary procedures are outlined. Record sheets are included, and the student must complete the experiment, filling out the record sheets and graphs. Each experiment is tested by an actual printing of the resulting camera negatives and a graphing of the resulting densities. The student must then evaluate his own results in comparison to the known successful outcome of the experiment, and if his results do not match, he must evaluate his experimental procedures and re-test until the required result is achieved.

Once the tests are completed, the student has a practical working knowledge, a usable exposure/development system, and is ready to assimilate all the other available published material dealing with exposure/development systems. We feel this method of instruction is important in that each student progresses at his own pace, moving through each phase as his knowledge and expertise permit.

The workbook has eliminated all but the essential aspects of the testing procedures, resulting in less confusion during the basic learning process. We have taken a complex subject and reduced it to the visual and verbal essentials which, combined with the actual experiments, result in a reinforced learning experience. Considering the tendency towards computerized educational programming, it is likely that with some adaptation this subject matter could become a computer program.

For additional information contact Professors Ardine Nelson or Dana Vibberts, Department of Photography and Cinema, 156 W. 19th Ave., The Ohio State University, Columbus, Ohio 43210.

PSYCHOLOGY

Instructional Resources and Graduate Assistant Teacher Training for Developmental Psychology

Psychology 244 is a large enrollment, multi-section undergraduate course which deals with human psychological development from conception through the elementary years. The course was first taught as a one-section lecture course with as many as ten small recitation sections staffed by graduate assistants. Diminishing departmental resources, faculty dissatisfaction with large student lecture sections, and faculty concern for the quality of teacher training available to graduate assistants combined to change the role of graduate assistant from one of recitation leader to one of instructor of independent sections with nearly full responsibility for course content and student evaluation.

To develop a systematic set of instructional resources, a two-day workshop was held during which teaching styles and objectives were discussed, weekly seminar topics were planned, and various project teams were organized. Five major problem areas were identified--design of instruction, presentation of instruction, handling interpersonal conflict, assessments of instruction, and development of content expertise--and were used to structure the weekly seminar topics. In addition, portions of the seminar were set aside for work on the instructional aids and for discussion of ongoing problems encountered in the classroom. Graduate assistants in small teams drafted proposals in line with the project objectives.

The teams assembled materials for lecture guides and a test item file, drafted an instructor's observation record, and collected materials for a teaching library. The developmental psychology faculty assisted by supplying class lecture notes, test items, and other materials. One or more members of the project staff attended each of seven Learning and Evaluation Service workshops dealing with various aspects of classroom instruction, and work began on overhead transparencies and campus instructional resources guides.

Graduate assistant teaching was evaluated with faculty observation and student feedback on individual lectures and with course feedback using standard Student Instructional Rating System (SIRS) forms. Despite graduate assistant dissatisfaction with portions of the Learning and Evaluation Service workshops, observation clearly indicated that the graduate assistants were making effective use of many of the teaching techniques to which they had been exposed.

For additional information contact Dr. Hiram E. Fitzgerald, Department of Psychology, 412 Baker Hall, Michigan State University, East Lansing, Michigan 48824.

II. Institutional Support

Dental Faculty Development--A Satellite Symposium

A dramatic "first" in inter-faculty communication took place at the Indiana University School of Dentistry on the evening of February 28, 1978, when Space Age technology enabled University faculty members to hold a joint meeting with faculty counterparts, assembled on the West Coast, from dental schools at the University of California at San Francisco and the University of the Pacific. Through the Office of Faculty Development, a satellite-assisted television program involving the three schools was presented with the aid of the Communications Technology Satellite which is jointly owned and operated by the governments of the United States and Canada.

The two-hour program offered an exciting opportunity for the three School of Dentistry faculties to join in a discussion of mutual concerns. Dental school faculty members at campuses in Evansville, South Bend, Fort Wayne, and Gary also participated in this transcontinental exchange of information and opinions through the network of the Indiana Higher Education Telecommunications System.

The purposes of this symposium were: (1) to help faculty members at the three universities to identify common problems in teaching, research, and service and (2) to offer for consideration possible solutions to such problems. Under the program format the moderator read a question that appeared to be relevant at one or more of the three schools. Then a short videotape episode was shown which depicted part of the problem. Panel members were called upon to present different perspectives on the questions and to suggest workable answers. In addition, the assembled faculty members were encouraged to write questions about teaching, research, and professional development for discussion by the panelists.

Comments freely voiced following the program were strongly favorable to this faculty development program. On completion of the program, a questionnaire was distributed to the 87 faculty members in attendance at the Indianapolis site. The overall evaluation reflected strong support for this type of faculty development.

For additional information, contact Dr. James Roche, Assistant Dean for Faculty Development, Indiana University, Indianapolis, Indiana 46202.

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Implementation of TIPS in the Teaching of Undergraduate Science Courses

Eleven University of Wisconsin science professors completed a ten-day Teaching Improvement Process System (TIPS) workshop where they were trained to use computers to formulate teaching objectives, develop effective teaching strategies, write quizzes, use formative evaluation data, and prepare remedial and enrichment study materials. They were introduced to the use of batch-processed CHEM TIPS to manage instruction in large chemistry courses and to a similar application on interactive time-shared computer terminals in small classes.

Instructor response to the workshop was generally favorable. For most, the experience of preparing teaching objectives was a new and satisfying experience, and they profited from the exchange of ideas, materials, and strategies with other science instructors. Though participants had some initial technical difficulty, they reported positive feelings about the use of computers.

The faculty has implemented TIPS in 20 courses, involving about 10,000 students, including general chemistry, organic chemistry, biology, cell biology, and introductory physics. These students vote overwhelmingly to continue TIPS in other classes. They find that the computer assignments help them to better define their learning tasks, as a result, they study more frequently and carefully to prepare for exams. Instructors report that as a result of TIPS, students do better on final exams.

For more information, contact Roland Roskos or Bassam Z. Shakhashiri, Department of Chemistry, University of Wisconsin--La Crosse, La Crosse, Wisconsin 54601.

EXTRA-DEPARTMENTAL PROGRAMS

Pilot Program

The University of Michigan's Pilot Program offers approximately 575 first- and second-year undergraduate residents of Alice Lloyd Hall a unique opportunity to live in a personalized and educationally stimulating environment. For seventeen years Pilot has been providing the benefits of a small liberal arts college--a sense of community, a supportive atmosphere, close student-teacher relationships, experimental courses with small enrollments--within the context of a large university.

Students in the program elect one or two Pilot courses per semester in addition to their regular courses in the College of Literature, Science, and the Arts. These courses are designed and taught by graduate students who are resident teaching fellows in the program and are meant to probe important ethical, social, cultural, and scientific questions of interest to any person regardless of intended major or career. Because the teachers live in the residence hall and interact with students as friends as well as teachers, the traditional impersonal and hierarchical relationship between students and teachers is broken down; this new relationship leads to a classroom atmosphere more conducive to active student participation.

The program has recently increased its number of academic offerings, and most can be elected on either a graded or pass/fail basis. Students can now fulfill the University's freshman English composition requirement in a Pilot Seminar where they simultaneously strengthen writing skills and pursue interests in important topics such as "Film as Art," "Existentialism," "American Culture and Minorities," or "Criminal Justice." One of the most popular academic options at Pilot is the "Real World" Placement Program, introduced in response to the strong career orientation of incoming students. Participants spend six to eight weeks in a field placement, supervised by a resident fellow and an on-site professional. This allows students to test out career interests and gain valuable experience in a professional field while earning credit.

Dorm government affords students the opportunity to vote on many dorm-wide functions. Students strongly influence the hiring of resident fellows and student advisors through participation in staff nominating committees, and they help to shape overall policy through membership in administrative committees. The "Special Interest Corridors" at Alice Lloyd allow people with an interest in a particular subject--women's issues, the outdoors, music--to live together in a residence hall.

For additional information contact Donald R. Brown, Center for Research on Learning and Teaching, 109 E. Madison, Ann Arbor, Michigan 48109.

FACULTY DEVELOPMENT

Assisting Faculty to Adapt Instruction to Student Characteristics

A special research and development effort over the past three years has been focused on providing University of Minnesota faculty members with assistance to become better able to adapt instruction to the developmental and learning needs of their students. A model of consultation has been formulated as the focus and forum for this assistance.

The ultimate concern is to facilitate and encourage the intellectual development of students by aiding faculty to adapt the content and approaches of their instruction to student needs, readiness, and learning styles. The nature of the concern is based (1) on research in the literature dealing with the intellectual development of college students (e.g., Perry, William. Focus of intellectual development in the college years. New York: Holt, Rinehart & Winston, Inc., 1968), and (2) on the ability of teachers to accurately assess student characteristics related to this development in order to adjust instruction to optimize further intellectual growth.

The purpose of the consultation, then, is to assist faculty members in identifying and dealing with the discrepancies between students' expectations of course activities and procedures, and the instructors' expectations of students' performances. The discrepancies between students' and professors' expectations concerning the procedures and processes of teaching and learning raise two issues fundamental to assisting faculty and to continuing research: (1) the implications of the mismatch for promoting the intellectual development of college students, and (2) working with faculty to optimize this mismatch. Based on the successful results over the past three years, the effort is being expanded to make the consulting assistance available to more faculty members.

For further information write to Professor Clyde A. Parker, Department of Social, Psychological, and Philosophical Foundations of Education, University of Minnesota, 202 Burton Hall, 178 Pillsbury Drive S.E., Minneapolis, Minnesota 55455.

Campus Teaching Program

Over the past several years the Office of Instructional Resources (OIR) at the University of Illinois, Urbana-Champaign has been conducting a program to improve instruction designed especially for teaching assistants (TAs), but which includes some faculty. The program is based on several explicit assumptions: (1) A large number of departments are already carrying out some activity related to the teaching of TAs and, in those departments, the best use of OIR personnel time is to augment that activity. (2) Many departments have a particular faculty member whose assignment includes working with TAs. Our plan is to incorporate these faculty members' efforts insofar as possible in designing the program for their TAs. (3) Disciplines vary in the way they utilize TAs and have very different ideas about the most relevant experience for their assistants.

Consequently, we take the view that each program must be designed with the needs, interests, and present possibilities of each department in mind. Experience so far tends to indicate that a program for a department is likely to involve a series of seminars with each one focusing on some, but rarely all, of the following topics: lecturing, leading discussion groups, writing quizzes and exams, adjusting instruction to student differences, effective use of questions, evaluation of teaching, involving and motivating students, and grading.

The programs usually rely heavily upon videotaping each teacher in the classroom (once near the beginning of the semester and again toward the end), with intensive discussions, either in small groups or privately, of the videotaped performance. This appears to be one of the most effective aspects of the entire program.

Two monographs have been developed, one on "Improving Your Lecturing" and the other on "Improving Your Test Questions." The one on lecturing has already been requested by over one thousand faculty in all ranks.

It appears highly improbable that the OIR staff will grow enough to be able to accomodate all the departments that might want its services. This may not be necessary; we are trying to train faculty in the various departments to carry on a similar program.

For further information, contact Dr. Richard Smock, Course Development Division, Office of Instructional Resources, University of Illinois, 205 South Goodwin, Urbana, Illinois 61801.

Classroom Communication for International Teaching Associates

The Program in English as a Second Language (ESL) at the University of Minnesota offers a special course in oral communication for foreign graduate students who have applied for appointments as Teaching Associates (TAs) in various University departments.

The course is designed to improve each participant's communication skills through the performance of progressively more complex teaching tasks, videotape feedback consultations, and a sequence of ESL exercises in aural comprehension and pronunciation. The TAs also receive factual information about the University of Minnesota undergraduate population and the procedures and criteria whereby teachers are evaluated.

The tasks to be completed by each participant are as follows: (1) presenting a syllabus for an introductory course; (2) defining terms or basic concepts; (3) fielding students' questions; (4) giving clear oral directions; (5) reading aloud an abstract of an original paper in one's area of expertise; (6) using the blackboard to present a model, diagram, or table; and (7) lecturing and moderating discussion.

As participants perform these tasks, they are either audiotaped in the classroom or videotaped in the facilities of the Committee on Language Programs. Within a week of each performance, the instructor meets individually with the participant to present a critique of the tape.

Sequences of ESL pre-tests, exercises, and post-tests in the areas of aural comprehension and pronunciation are initiated in the two sixty-minute class sessions per week. Additional explanation and practice of the exercises continue on a weekly tutorial basis until the participant has demonstrated mastery of them.

For further information, write to Mark Landa or William Perry, Program in English as a Second Language, 152 Klaeber Court, 320-16th Avenue Southeast, University of Minnesota, Minneapolis, Minnesota 55455.

Group Processes in Nursing Faculty Meetings

Fifteen nursing faculty members who taught from the same sophomore year syllabus found that many of their testing problems were caused by their lack of consensus on legitimate but differing curriculum views. Consultants proposed that the group focus on improving its meeting, communications, and decision-making processes during regular meetings.

A consultant met with the faculty for a period of eight months during the 1977-78 school year. A portion of the faculty meetings would be devoted to learning group processes, or, more often, at the end of the meeting the consultant would simply critique the group communication processes (including memos, reports, etc.). As a result the style of the meetings changed from an informal general discussion format to a reasonably "tight" meeting with a formal agenda, specified meeting formats, and carefully recorded outcomes. Some of the meeting formats included: decision by consensus, parliamentary decision by majority vote, brainstorming, etc.

Evaluation of the project by anonymous questionnaire and by observation suggested that the faculty had incorporated several new methods in their repertoire of group processes. There was also, however, a sense that these processes had been somewhat inefficient, and the consultant group is now working on additional methods for improving efficiency.

Further information can be acquired from Tom Schwen, Director, Division of Development and Special Projects, Audio Visual Center, Indiana University, Bloomington, Indiana, 47401.

The Roles and Contributions of Women in the Humanities

To provide students with in-depth examinations of significant aspects of their culture, the Department of Humanities at Michigan State University implemented a "core/satellite" course, in which three days a week the "core" course would meet to cover the usual interdisciplinary humanities topics, and one day a week the "satellite" section would deal with a special area of interest. The first course offered was one in which the satellite focused on the historical role of women in the social, political, religious, and cultural life of their times.

The first term of the three-term core/satellite course covered the roles, contributions, and images of women from the Medieval World through the Age of Absolutism in the 17th Century; the second term dealt with women from the 18th Century to the present; and the third term focused on "Women in the Ancient World." The overall goal of the offering was to increase students' knowledge and appreciation of the roles and contributions of women.

The Educational Development Program provided funds to purchase instructional materials to be housed in the College Learning Resource Center and made available to any student or instructor interested in the core/satellite program on women. At the end of the first term, students were asked to respond to a questionnaire designed to obtain the students' reactions to the organization, methodology, and content of the core/satellite experiment. The students, with very few exceptions, liked the lectures, discussions, and slide presentations in the satellite sections and found it easy to integrate the materials on women into the broader historical and cultural milieu. About one-third of the students were men, and they were positive about this experience.

An attitudinal test designed to assess "the general feeling that students have for the level of medieval culture and the status of women in that culture" was administered at the beginning and end of the term. Results indicate that students learned a great deal about how and why social institutions affect the position of women. Recent enrollment figures for the satellite section dealing with women in ancient Greece and Rome and in the Judeo-Christian eras show that the satellite is on its way to becoming an established part of the curriculum.

For additional information contact Dr. Jane Karoline Vieth, Department of Humanities, 294 Ernst Bessey Hall, Michigan State University, East Lansing, Michigan 48824.

Technologically Oriented Instructional Games

Introduction to Environmental Systems (IDC 201) is an interdisciplinary undergraduate course which presents basic systems concepts in a non-mathematical manner. A key objective of this course is to provide students with opportunities to play decision-making roles so as to gain some appreciation of the internal structure of technological processes and to perceive the nature of the interface of the processes with society. To achieve this objective, four interactive, computer-based instructional games having a technological orientation were designed, implemented, and evaluated: Dispatch--efficient electric power generation and distribution, Waqual--effective treatment of sewage before it enters a river in order to maintain water quality, Popdyn--use of wasp population to establish some control of a beetle population in order to minimize food damage, and Feedlot--trade-offs among factors involved in a beef feedlot operation including short-term profit (or loss) and long-term land value. It is believed that these games focus student attention on major social issues and develop an experiential base for more advanced learning in decision-making with regard to problems and issues in a technological society.

The games are self-paced and are played by students individually with the aid of a manual. Instructors provide no other assistance. Whether a student plays a game or not is his choice, but by playing a student can earn credit toward his final grade. Data were collected on the extent to which the games were used. Students described the strategies they employed and responded to Student Instructional Rating System forms which led to specific suggestions for further development and improvement of the games.

Students enroll in the course in sizeable numbers. The games have been provided to faculty members at other institutions and reports indicate that it is relatively easy to use the computer programs on computers that are different from the CDC 6500 at Michigan State University.

For additional information contact Dr. Ronald C. Rosenberg or Dr. Frederick T. Fink, Department of Mechanical Engineering, 209 Engineering Building, Michigan State University, East Lansing, Michigan 48824.

An Undergraduate Program in Mathematical Methods in the Social Sciences

The College of Arts and Sciences at Northwestern University has introduced a program combining the study of social science with mathematical training in formal, analytical methods. The program provides an excellent preparation for careers in the public and private sectors which require both quantitative skills and a solid background in the social sciences.

In each of their first two years in the program, students enroll in two coordinated three-quarter courses covering mathematical methods and their applications to various problems in the social sciences. In addition to this, students participate in a senior honors seminar and complete a major in one of the social sciences--anthropology, economics, geography, political science, psychology, or sociology. Students who satisfy all the requirements for a social science major and for the program are granted a dual major in their social science specialty and in Mathematical Methods in the Social Sciences. Students normally enter the program in the freshman year, but they may do so as late as the beginning of the sophomore year. The program provides an honors curriculum in the social sciences which makes the acquisition and use of formal methods a paramount goal. Participation is by invitation only and is limited to a small number of well-qualified students.

The main components of the program are a set of 12 courses typically taken during the freshman and sophomore years, a biweekly colloquium, a major in a particular social science completed during the junior and senior years (approximately eight courses), and a senior seminar (three courses). After fulfilling the general education requirements of the College of Arts and Sciences (up to 14 courses), students may select at least 11 electives. In addition to career preparation, the dual major provides strong preparation for graduate and professional schools.

For additional information contact Dr. John O. Ledyard, Department of Economics, 3020 Leverone Hall, Northwestern University, Evanston, Illinois 60201.

MEASUREMENT AND EVALUATION

Course and Program Evaluation by Students

The Office of Instructional Resources at the University of Illinois, Urbana-Chamgaign has developed and put into use new instruments for assessing student reactions to individual courses and to their major programs of instruction.

The first instrument, the Instructor and Course Evaluation Survey, encourages substantial item selection by individual faculty and by departments. Departments may select a "core" of items--any that they wish (up to 23 items). If a core has been selected, each instructor's request from that department triggers the computer to print those items on the questionnaire for his students. If a department has no core, or if the core is fewer than 23 items, each instructor may select any items (up to 23) from a catalogue of 623 items. Finally, there are three general items on every questionnaire which are normed according to campus-wide results. Thus, the questionnaire is designed to yield data for administrative evaluation (the general and core items) and for self-improvement (the catalogue items). During the first semester of its general availability, it was used in approximately 60% of the sections for which a questionnaire of this type is applicable.

Students may provide evaluative data on their major programs of instruction through an instrument called the Program Evaluation Survey (PES). The PES was developed to measure student perceptions of and satisfaction with the instructional, curricular, advising, and operational phases of an academic department. It was developed as part of a comprehensive evaluation program initiated by the University in 1973 to better understand and determine the quality of academic units. A report is available which describes the development of the PES--its intended functions, validity, reliability, and usefulness. To provide context for the development of the PES, the report also presents a brief summary of the role and function of the Council on Program Evaluation, a committee of faculty and students chaired by an Associate Vice-Chancellor for Academic Affairs charged with the responsibility of designing and implementing a faculty-based evaluation.

For further information, contact Dr. Charles J. McIntyre, Director, Office of Instructional Resources, University of Illinois, 205 South Goodwin, Urbana, Illinois 61801.

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